Intelligent Energy Europe

EPA-NR

EPA-NR
Energy Performance Assessment for Non-Residential Buildings in Europe

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Content

- Objective EPA-NR and the partners
- Key issues in development of assessment methods
- EPA-NR method and tools
- Application strategies
- Pilot studies: the tools in practice

Objectives EPA-NR

To support Member States in the EPBD implementation by:

- **producing a general method for the assessment of the energy performance of existing non residential buildings that can easily be applied in practice. (practitioners)**
- **provide guidance for those implementation aspects that are related to the method. (policy makers)**

More specifically:

- **benefit from experiences in the MS**
- **provide a method and instruments (including software)**
- **test and show the functioning in practice**
- **provide guidance to end-users and policy makers**
- **exchange knowledge and ideas**

Project Partners

AUSTRIA	**- Arsenal Research**
	- Österreichisches Ökologie Institut (ÖÖI)
DENMARK	**Danish Building Research Institut (SBi)**
FRANCE	**Centre Scientifique et Technique du Bâtiment (CSTB)**
GERMANY	**Fraunhofer-IBP**
GREECE	**National Observatory of Athens (NOA)**
ITALY	**National Agency for New Technology, Energy and the Environment (ENEA)**
The NETHERLANDS	**- Netherlands Organisation for Applied Scientific Research (TNO)**
	- EBM-consult (project co-ordinator)

Observer countries

Belgium

Czech Republic

Malta

Poland

Serbia

Slovenia

United Kingdom

Cyprus

Luxemburg

Norway

Romania

Slovakia

Spain

Key issues

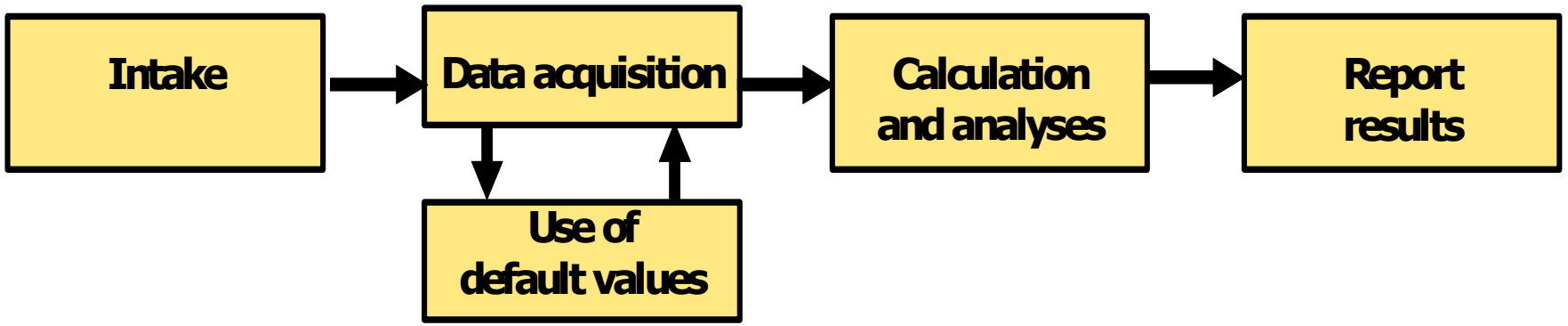
Balance the trade-off's in the assessment process

- **Effective and efficient process (accuracy/reproducibility against cost) (data acquisition/inspection using defaults)**
- **Harmonisation versus flexibility in practice (Harmonise uniform parts and create flexibility to adjust to local conditions)**

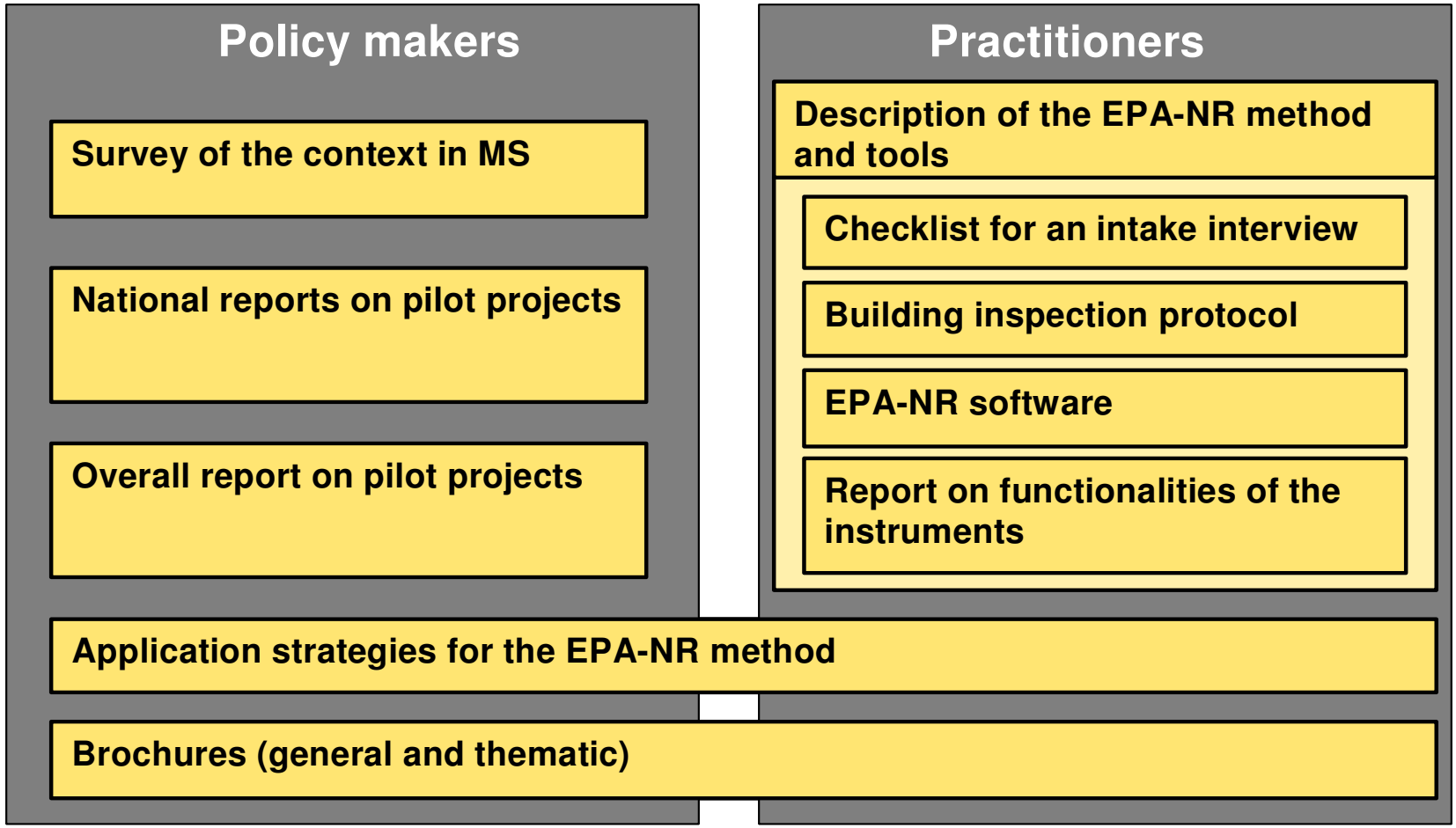
Assessment process

Stages are dependent on building type, type of client, number of buildings

Typical stages



Deliverables EPA-NR



Tools for the process stages

Typical stages	Tools per stage	Tools on the method as a whole
Intake interview with client	Checklist on intake	Booklet on method
Data acquisition	Inspection protocol	Application strategy
Calculation and analyses	Software and manual	
Report results (country specific; no tool)		

Checklist on the intake

First step in the EP assessment process

- get acquainted with the client and his organisation
- refine the definition of the deliverable
- discuss the acquisition of the data needed
- discuss and decide on the assessment process
- get information about the client's wishes:
  the possibilities and strategies with respect to the building or the building stock to a limited extent

Inspection protocol (1)

The data acquisition often contains three steps:

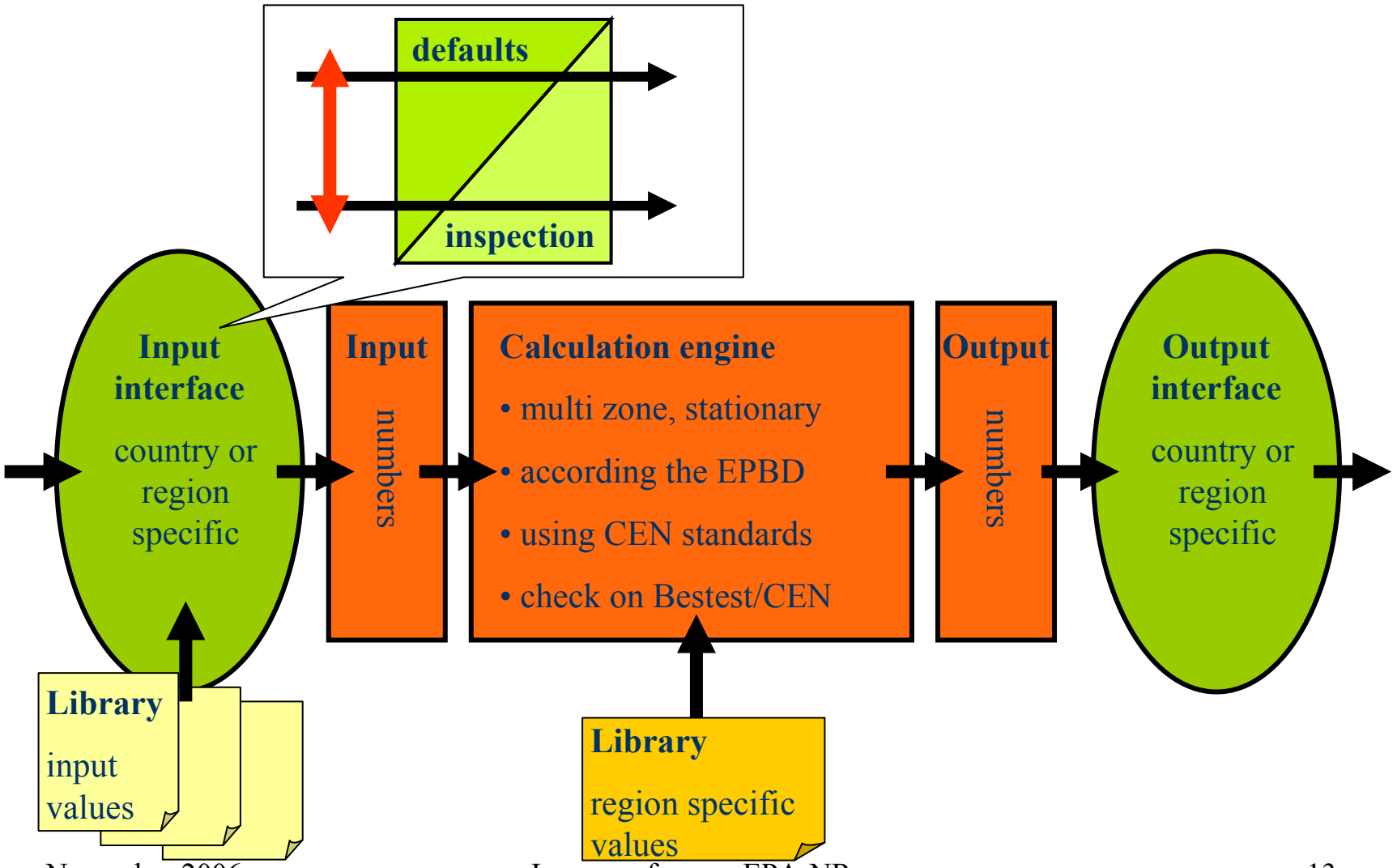
1. **data from interview with the owner and/or facility manager**
2. **study of architectural drawings and other planning documentation such as HVAC schemes**
3. **inspection of the building and systems additional information or checking already known information**

Inspection protocol (2)

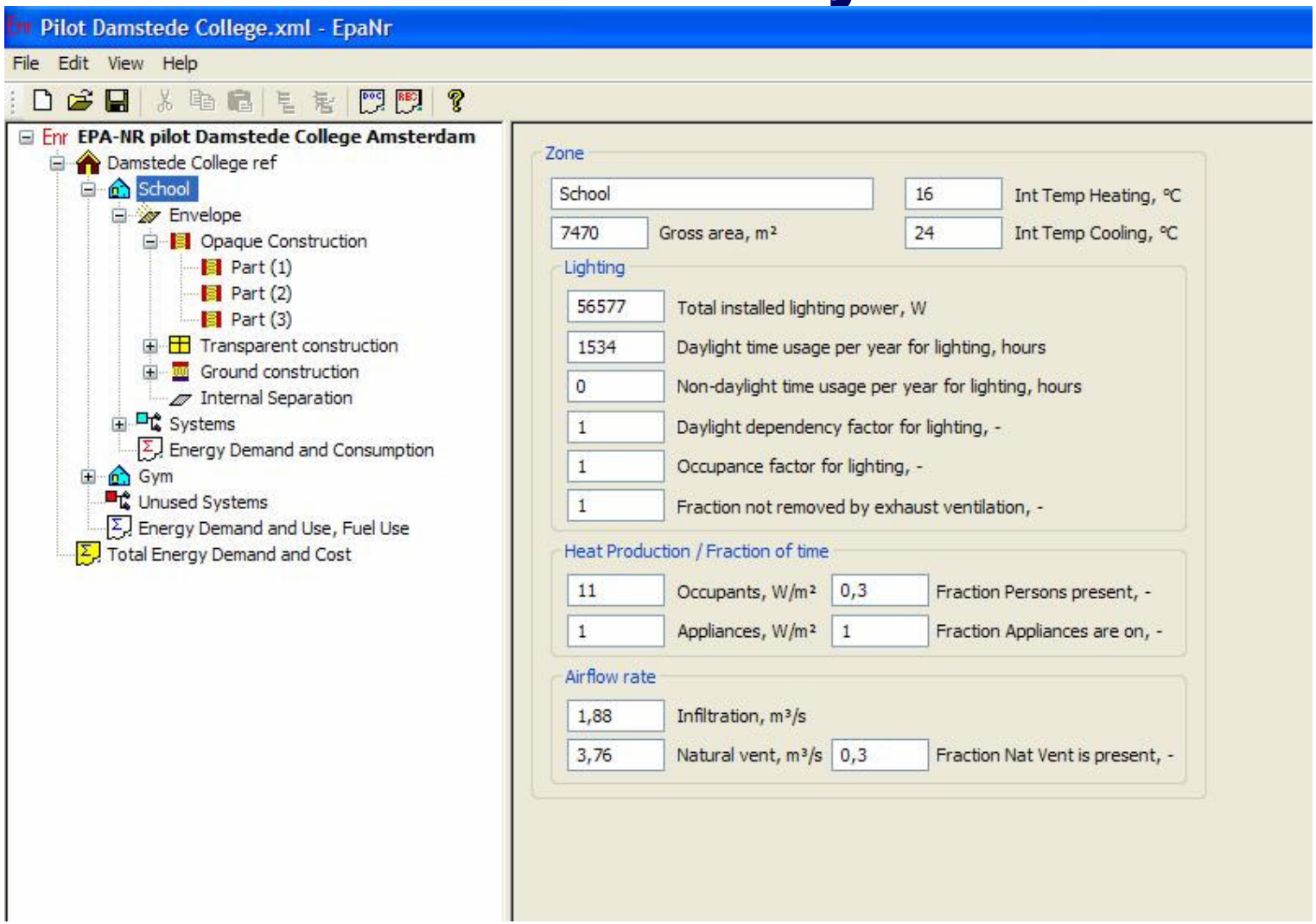
The report is divided into three parts:

- **the inspection protocol (list of necessary data to be identified during the inspection of the building) including international and national inspection tips**
- **an inspection protocol check list adapted to the required input by the EPA-NR tool**
- **additional national tips on how to acquire data that cannot be gathered during the inspection but is needed for the calculation with the EPA-NR tool.**

EPA-NR software

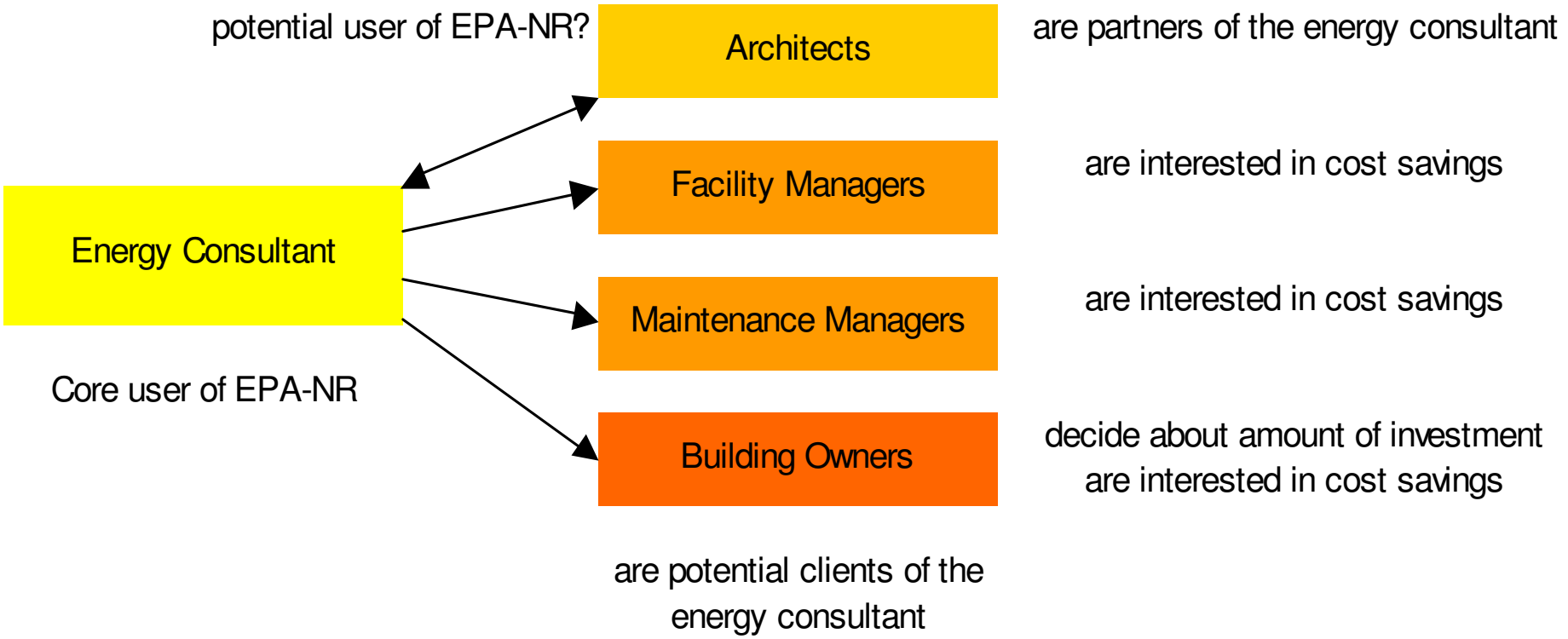


Software screen lay out



Application strategies

The consultant and the typology of clients and their interests



Pilots EPA-NR

To evaluate the method and tools and provide examples:

- **building sectors: education, offices, health care**
- **each sector represented in 7 countries: 21 projects**
- **building ages vary from 2 to 70 years**
- **sizes range from 800 to 30,000 square meters**

The whole method is applied to pilot projects

Pilots EPA-NR : educational buildings

primary and secondary school at stuttgart (DE)

University in Champs sur Marne (FR)

school at Amsterdam (NL)

Pilots EPA-NR : educational buildings

Schools in Greece

Pilots EPA-NR : offices buildings

office of the ministry of environment, Berlin (DE)

Office building at Amsterdam (NL)

office of private insurance company, Munich (DE)

Pilots EPA-NR : offices buildings

Office building - Greece

Office building - France

Pilots EPA-NR : health care buildings

home for the elderly, nursery home
Stuttgart (DE)

Hospital, building for Handicapped persons,
Lagny (Fr)

Hospital, Apeldoorn, (NL)

Pilots EPA-NR

- **All pilot projects are selected**
- **Execution of pilot projects is going on**
- **Stages already finished :**
  - intake interview
  - inspection of the buildings

Pilots EPA-NR

•Calculation of energy performance using EPA-NR software/calculation of energy savings impact :

- •First calculations based on pilot projects : some clarifications and explanations are needed
- •List of modifications finalised
- •Update the software

•Calculations using new version of EPA-NR software : from December 2006 to February 2007

•National reports + global report +brochures

Pilots EPA-NR

First impressions about :
Checklist on intake (intake interview with the client)

- gives guidance to discuss with the client
- Very helpful for the first approach to the building
- facilitates to identify data sources (i.e. drawings, technical specifications, energy and water bills, interviews with occupants)
- The objectives are clear but the document is too detailed
- gives a relatively detailed list of additional to the Energy Certificate deliverables, that the consultant can introduce to the client
- could be adapted in accordance to the national legislation.
- client is well informed after the intake interview

Pilots EPA-NR

First impressions about :
Inspection protocol (inspection of the building)

- Most of the required data are comprehensible although in some cases, very detailed
- In most cases, the inspection protocol facilitates the user with some “difficult” data, providing tips or default values
- In general it gives guidance on the relevant points to check for a proposal of saving measures recommendations
- the inspection protocol allows having the most calculation tool inputs
- some data that need further explanation (software inputs)
- ……

Pilots EPA-NR : national reports

- **Project summary : brief description of the project**
- **Audit of the building**
  - **Actual situation** : measured energy consumption, problems, possible causes, proposed solutions : **elements that come from the 'intake interview' and/or 'inspection of the building'**

Pilots EPA-NR : national reports

- **Audit of the building**

  - **calculating energy use** using EPA_NR software based on actual situation

    - **Description of the software inputs**

    - **Results : Energy performance of the building**

Pilots EPA-NR : national reports

- **Audit of the building**
  - **The results**
    - **Primary energy use and CO2 emission of the building**

Primary energy use for the building : kWh/m²/year	CO2 emission for the building : Kg/m²/year

    - **Primary energy use and Co2 emission by type of energy**
    - **Primary energy and Co2 emission by use**
    - **Heating/cooling energy demand**
      - **Energy losses : by transmission, by ventilation**
      - **Energy gains : Solar , internal, ..**

Pilots EPA-NR : national reports

- **Calculation of energy savings : scenarios for improvement**

  3 scenarios of improvment with three levels : minimum, medium, high

  - Background and proposed solution
  - Individual impact of the proposed solution :
    - energy savings and CO2 emission savings
    - Investment costs and payback times for the proposed solution

Proposal : the most appropriate scenario as an advice to the owner

Benefits of EPA-NR

- In accordance with the EPBD and using available CEN standards/drafts
- Applicable all over the EU
- Experience from many countries incorporated
- Easily adaptable to local context
- Combined effort is efficient now and in the future (cost sharing)

Thank you for your attention

www.epa-nr.org